

abdominis valde ampliatis; tibiis brevibus, anticis flexuosis, reliquis rectis. Long. 3 lin.

*Hab.* South Australia; Tasmania.

This little species will be easily recognized by the numerous tubercles on the elytra.

*Rhinoncus nigriventris.*

*R. ovatus*, subnitidus, supra pedibusque ferrugineus, parce subtiliter pilosus, sternis abdomineque nitide nigris; rostro breviusculo, sat valido; prothorace crebre punctato, basi nigro-marginato; elytris cordiformibus, striato-punctatis, interstitiis valde convexis, sutura basi albido-squamosa; corpore infra modice punctato. Long.  $1\frac{1}{2}$  lin.

*Hab.* Queensland (Gayndah).

*Rhinoncus* was, with one exception, a purely European genus; there are, however, a number of European genera with representatives, not yet described, in Australia; some of them are also found in the Malasian region. This species is very distinct, and, with all the others from Gayndah mentioned above, have been kindly sent to me by Mr. Masters, whose successful explorations I have had so often to mention.

ERRATUM.

In vol. ix. p. 139, under *Ochrophabe*, "scrobes antemedianæ" should have been "scrobes postmedianæ."

XXII.—*On the Silurus and Glanis of the Ancient Greeks and Romans.* By the Rev. W. HOUGHTON, M.A., F.L.S.

THERE appears to be no doubt that the sheatfish (*Silurus glanis*, Linn.), which has of late years attracted some attention in this country, was known to the ancient Greeks and Romans under the names of *silurus* (σίλουρος) and *glanis* (γλανίς), although some of the writers make a distinction between the names, and the silurus of one author does not necessarily represent the silurus of another. "The controversies and concessions of perplexed critics," as the late Dr. Badham remarks, "caused by this confusion in the ancient nomenclature is amusing. Poor Scaliger, having first asserted that the glanis and silurus were different fish, and the silurus certainly the sturgeon, next doubts, and lastly becomes convinced, that the silurus was unknown to Aristotle; and after breaking his head to reconcile what was quite irreconcilable, he offers Cardan, at last, to give up the controversy altogether, on one condition—

viz. that if he himself consents no longer to dispute the identity of the glanis and silurus, Cardan on his side must forbear to teach or listen to others who would make him believe that the silurus was the sturgeon. 'Itaque,' says he (laying down the conditions), 'silurus sane esto qui et glanis, modo ne glanim quis dicat sturionem.'" (Prose *Haliotics*, p. 305, note; see also Scaliger, *Exerc. ad Card.* 218. n. 3.)

Let us note what classical writers have written as to the silurus and glanis.

Aristotle, in his 'History of Animals,' does not once mention the silurus by name; but speaks of a fish called glanis, which he says has a tail like a cordylus (newt), that it produces its ova in a mass (*συνεχῆς ἀφιᾶσι τὸ κύημα*) like perch and frogs, that large individuals deposit them in deep water, but the smaller ones in shallow water near the roots of willows amongst weeds and aquatic plants, that the male glanis is very careful of the young fry and continues to watch by the eggs and young for forty or fifty days to protect them from other fish, that the ova of the glanis are as large as the seed of the orobus, that it has four branchiæ on each side, all divided except the last, that the female glanis is better to eat than the male (an exception, Aristotle thinks, to fish in general in this respect), that this fish, from swimming near the surface, is sometimes star-struck and stupified by thunder, that, if it has ever once swallowed a hook, it will bite and destroy the hook with its hard teeth. This is, I believe, all that the Stagirite has written about the glanis; and with the exception perhaps of the male of this fish guarding its eggs and young fry, there is hardly any thing left by means of which the glanis can be identified. Aristotle nowhere speaks of the great size to which the sheatfish grows, though he mentions large and small individuals; again, the glanis is represented as swimming near the surface, whereas the sheatfish, like the *Siluridæ* generally, inhabits the bottom of the water.

Ælian appears to consider the glanis and silurus distinct species of the same family. He speaks of the glanis as being found in the Mæander (Mendere) and Lycus (Tchoruk-Su), rivers of Asia (Minor), also in Europe in the Strymon (Struma or Carason), and says it resembles the silurus. He mentions the fondness of the male for its eggs, but here, perhaps, is only quoting Aristotle.

Of the silurus, however, Ælian gives us some interesting and definite information. He tells us that "in the Egyptian city of Bubastis there is a pond in which are preserved a great number of siluri, which are quite tame and gentle; the people throw them pieces of bread; and the fish jump about one before

the other in their desire to seize the morsels. This fish is also found in rivers, as in the Cydnus (Tersoos) in Cilicia; but here it is small, the reason of which is that the clear pure water of this river, which is moreover very cold, does not supply the fish with abundant food, the siluri loving disturbed and muddy water, in which they fatten. The Pyramus (Jihun) and Sarus (Sihun), also Cilician rivers, produce much finer specimens. The siluri are also found in the Syrian Orontes (Nahr el Asy), in the river of the Ptolemies (Belus, the modern Nahr N'mân, which enters the Mediterranean near Ptolemais in Palestine), and in the lake of Apameia, where they grow to a large size." (Nat. Hist. xii. 29.)

Ælian is probably correct in all that he has stated here. The Siluridæ are still found in the Syrian rivers, as we learn from Russell, in his 'Natural History of Aleppo,' and from Häckel, who enumerates three genera. The lake of Apameia, in which the siluri are said by Ælian to grow to a large size, appears to be identical with Ayn el Taka ("a large spring issuing from near the foot of a mountain, and forming a small lake which communicates with the Orontes"), visited and described by Burekhardt in 1812. This traveller says that the temperature of the spring is "like that of water which has been heated by the sun in the midst of summer; it is probably owing to this temperature that we observed such vast numbers of fish in the lake, and that they resort here in the winter from the Orontes; it is principally the species called by the Arabs the black fish, on account of its ash-coloured flesh; its length varies from 5 to 8 feet." The fishery was in Burekhardt's time in the hands of the governor of Kalât el Medyk (*i. e.* castle of Medyk), the ancient Apameia, capital of the province of Apamene, which Seleucus Nicator fortified and called after the name of his wife. The fish were principally caught during the night in small boats, with harpoons, in enormous quantities; they were salted on the spot and carried all over Syria and to Cyprus, for the use of the Christians during their fasts. The governor of Kalât el Medyk derived income from this fishery amounting to about £3000. The lake is about 10 feet deep; "its breadth is quite irregular, being seldom more than half an hour; its length is about one hour and a half." There seems to be no doubt that the species of Siluroid spoken of by Ælian as inhabiting this lake is the *Silurus anguillar* figured by Russell (Aleppo, ii. pl. 8), who says the market is plentifully supplied with this fish from winter till March; it comes, he says, from the Orontes and stagnant waters near that river. "Though it has a rank taste, resembles coarse beef in colour, and by the doctors is considered unwholesome, it is much

eaten by the Christians. It is vulgarly called the black fish (*Simmak al Aswad*); but the natives affirm the proper name to be Siloor." (ii. p. 217.) It would be interesting to know whether modern travellers have visited this lake and reported on its fish. The *Silurus anguillaris*, Linn., is perhaps the *Clarias Orontis* mentioned by Dr. Günther.

In chapter 25 of Ælian's 14th book there is the following account of a curious method of catching siluri, pursued by the ancient Mysian inhabitants of Scythia and the Danubian districts, which is interesting and amusing. The species of fish here referred to is, I presume, the large European *Silurus glanis*. "An Istrian fisherman drives a pair of oxen down to the river-bank, not, however, for the purpose of ploughing; for as the proverb says there is nothing in common between an ox and a dolphin, so we may say, what can a fisherman's hands have to do with the plough? If a pair of horses are at hand, then the fisherman makes use of horses; and with the yoke on his shoulders down he goes and takes his station at a spot which he thinks will make a convenient seat for himself, and be a good place for sport. He fastens one of the ends of the fishing-rope, which is very strong and suitable, to the middle of the yoke, and supplies either the horses or the oxen, as the case may be, with sufficient fodder, and the beasts take their fill. To the other end of the rope he fastens a very strong and sharp hook baited with the lung of a wild bull; and this he throws into the water as a lure to the Istrian silurus (a very sweet lure for the fish), having previously attached a piece of lead of sufficient size to the rope near the place where the hook is bound on, for the purpose of regulating its position in the water. When the fish perceives the bait of bull's flesh, he rushes immediately at the prey, and, meeting with what he so dearly loves, opens wide his great jaws and greedily swallows the dreadful bait; then the glutton, turning himself round with pleasure, soon finds that he has been pierced unawares with the hook, and being eager to escape from his calamity, shakes the rope with the greatest violence. The fisherman observes this, and is filled with delight; he jumps from his seat, and—now in the character of a fisherman, now in that of a ploughman (like an actor who changes his mask in a play)—he urges on his oxen or his horses, and a mighty contest takes place between the monster (*κῆτος*) and the yoked animals; for the creature (the foster-child of the Ister) draws downwards with all his might, while the yoked animals pull the rope in the opposite direction. The fish is beaten by the united efforts of two, gives in, and is hauled on to the bank."

The sheatfish, it is well known, still occurs in the Danube,

and often grows to an enormous size; so that Ælian's account of fishing for it may hardly be exaggerated. Some years ago there was an amusing drawing in 'Punch's Almanac' of an angler, whose fishing-apparatus consisted of a portable crane on wheels with ropes and pulleys, fishing for these same siluri, in case of their ever growing to a gigantic size in the rivers of this country.

It is not quite certain whether Pliny meant to distinguish between the silurus and the glanis. Of the latter he only says, "cautius qui glanis vocatur, aversos mordet hamos, nec devorat sed esca spoliat" (Nat. Hist. ix. 43). He may here be referring to what Aristotle says in the passage I have quoted above. Of the silurus he says that it inhabits a lake called Nilides, formed by the Nile (v. 9), also that it occurs in the rivers of the Fortunate Islands (Canaries) (vi. 32). He enumerates the silurus of the Nile amongst the fish which grow to an enormous size, speaks of the devastation it commits, and adds that it sometimes drags horses under the water as they swim (ix. 15); the male takes care of the eggs (ix. 51). Athenæus quotes old writers who appear to regard the glanis and silurus as distinct fish; the glanis is always much esteemed as a dainty dish. Matron, the parodist, mentions this fish, with numerous others, as one of the choice items at an Attic banquet (Athenæus, iv. 136, c). Athenæus compares a large fish found in the Nile to the fish called glanis which is found in the Danube (vii. 311, f). He mentions the silurus four times. In one passage he merely names it as one he remembered when he was in Egypt (vii. 312, b); in another passage (vii. 287, b) he asks "why people do not call the fish *σειούρος* instead of *σίλουρος*, as he has his name from constantly shaking his tail (*ἀπό τοῦ σειεῖν τὴν οὐράν*)." In other passages the word silurus is used with the epithet "bad" or stinking, as Sopater the parodist writes (vi. 230, e):

*Σαπρὸν σίλουρον ἀργυροῦς πίναξ ἔχων*

("a stinking silurus on a silver dish"); and Diodorus of Sinope, speaking of flattering parasites, says that if a man were to eat cabbages and stinking siluri they would immediately say that his breath smelt delightfully of violets and roses:

*οἷς ἐπειδὴ προσερεύγοι,  
ῥαφανίδας ἢ σαπρὸν σίλουρον καταφαγῶν,  
ἴα καὶ ῥόδ' ἔφασαν αὐτὸν ἠριστηκέναι.*

(vi. 239, e.)

And the bad quality attributed to the silurus by Athenæus reminds one of what Juvenal has said to the same effect. He reminds Crispinus of his low birth and former low occupation,



when he used to hawk about siluri for sale in the streets of Alexandria :—

Iam princeps Equitum, magna qui voce solebat  
Vendere municipes fricta de merce siluros.

(Sat. iv. 32, 33.)

And the miser puts by for to-morrow's dinner the summer bean, a bit of lizard-fish, with half a stinking silurus :—

nec non differre in tempora cænæ  
Alterius conchem æstivam cum parte lacerti  
Signatam vel dimidio putrique siluro.

(Sat. xiv. 130.)

Several kinds of *Siluri* are now found in the Nile ; and it is probable that Juvenal is referring to some small-sized fish of that family which was much used by the poor people. Both the lacertus and the silurus were salted and sent over to Rome, just as we have seen the black fish from the lake of Apameia were salted and sent to Aleppo, as recorded by Burckhardt and Russell. The "frita de merce" appears to allude to the mode in which the fish were prepared. "Pisces fricti," says Apicius, "ut diu durent, eodem momento quo friguntur et levantur, aceto calido perfunduntur." Both Diodorus and Lucian tell us that the Egyptians used to export large quantities of salt fish. "The Nile," says Diodorus (i. 36), "produces all kinds of fish in great abundance ; it not only supplies abundant food which is eaten fresh by the natives, but an endless number (*πλήθος ἀνέκλειπτον*) which are salted and sent abroad." Lycinus (in Lucian, *Navigium*, cap. xv.) implores his friend "by Isis, to remember to bring him from Egypt the little salted fish of the Nile, or ointment from Canopus, or an ibis from Memphis, or" (he jocularly adds) "if his ship was big enough, even one of the pyramids."

The "stinking siluri" of Athenæus and Juvenal therefore no doubt allude to salted fish which, from being often hastily and carelessly prepared and hawked about the streets of Rome or other towns in the hot month of September, would merit the epithet applied to them.

Pausanias (*Græciæ Descrip.* iv. cap. xxxiv.) says that "the Grecian rivers do not produce creatures destructive to man, as the Indus, the Egyptian Nile, the Rhine, the Ister, Euphrates, and Phasis ; for these rivers nourish creatures which devour men, and in form they resemble the *glanides* of Hermus and the Mæander, excepting that they are blacker and stronger."

From the passages quoted it seems that various kinds of *Siluri* were known to the ancient Greeks and Romans, sometimes under the name of silurus, sometimes under that of glanis.

They do not mention them as fishes either of Greece or Italy; and I believe no species of this family is now found in the rivers of those countries. With regard to the male (*Silurus glanis*) protecting its fry, I am not aware whether any modern observer has recorded this circumstance. It is well known that some male members of the Siluridæ make nests and watch over their eggs and young ones, like the sticklebacks of this country. Dr. Hancock has described two species of the genus *Doras* (the round-headed and flat-headed hassars of Demerara) which evince great care for their young; and I believe Agassiz has noticed the same thing in two other genera of the same family. The males of *Arius fissus* and *A. Commersonii* carry the eggs in their mouth, the latter species even hatching them there. The peasants of Wallachia say that the males of *Silurus glanis* protect their young.

There is one more passage which requires a little consideration. In this one it is certain that the name *silurus* does not stand for any of the Siluridæ, but must mean a sturgeon. Even at the risk of disturbing the manes of J. C. Scaliger and Cardan I maintain that the *silurus* of the Moselle as sung of by Ausonius can be nothing else than a sturgeon.

Here are Ausonius's lines:—

Nunc pecus æquoreum celebrabere magne Silure :  
 Quem velut Actæo perductum tergora olivo  
 Amnicolam Delphina reor ; sic per freta magnum  
 Laberis, et longi vix corporis agmina solvis  
 Aut brevibus defensa vadis, aut fluminis ulvis :  
 Aut cum tranquillos moliris in amne meatus,  
 Te virides ripæ, te cærule turba natantum,  
 Te liquidæ mirantur aquæ : diffunditur alveo  
 Æstus, et extremi procurrunt margine fluctus.  
 Talis Atlantiaci quondam Balæna profundo,  
 Cum vento motuve suo telluris ad oras  
 Pellitur, exclusum fundit mare, magnaue surgunt  
 Æquora, vicinique timent decrescere montes.  
 Hic tamen, hic nostræ mitis Balæna Mosellæ,  
 Exitio procul est, magnoque honor additus amni.

(AUSON. *Id.* x. 135-149.)

Hardly a single sentence in this description can apply to the *Silurus glanis*: the arrow-like dartings of the unbending body cannot possibly refer to the sluggish, slow-swimming, mud-loving sheatfish; the voracious *silurus* can never be called "mitis Balæna:" but the whole description is well suited either to the common sturgeon or to the luso. The name river-dolphin is applicable not only in some degree to the general form of the sturgeon, but especially to the shape of its head; the "pecus

æquoreum" may refer to the gregarious habits of that fish; "mitis Balæna" is equally applicable to the mild and inoffensive sturgeon, while the "agmina defensa corporis" seem to allude to the bony plates on that fish's body. There are, it is true, other classical designations for the sturgeon more generally used, such as acipenser and helops; but in this passage of Ausonius, *silurus* certainly stands for that fish. Whether sturgeons are now found in the Moselle I am unable to say.

The flesh of the *silurus* formed part of the ancient pharmacopœia. Dioscorides (Mat. Med. ii. 29) says that in a fresh state it is nourishing and good for the bowels; but when salted it has no nutriment, though it is good for clearing the bronchial tubes and for the voice; used as a poultice it draws out thorns, while the brine from it is good in early stages of dysentery.

XXIII.—*Remarks on certain Errors in Mr. Jeffreys's Article on "The Mollusca of Europe compared with those of Eastern North America."* By A. E. VERRILL, Professor of Zoology in Yale College, New Haven, Conn., U. S. A.

IN the October number of the 'Annals and Magazine of Natural History' Mr. Jeffreys published an article upon this interesting subject, in which many important errors occur, due, no doubt, to the fact that the distinguished author is much less familiar with American than with European shells. But as the dredgings in connexion with the investigations of our fisheries by the U. S. Fish Commission were under my superintendence during the two past seasons, and Mr. Jeffreys alludes to the fact (though rather indefinitely) that he, by invitation of Professor Baird, accompanied us on several dredging-excursions in 1871, it seems necessary that I should point out some of the more important of these errors, lest it be supposed by some that the same views are held by me.

It is not my intention to discuss at this time the numerical results presented by Mr. Jeffreys; but I would remind the readers of his article that the regions compared are in no respect similar or parallel, and that it is scarcely fair to compare the shells from the entire coast of Europe with those from about 200 miles of the coast of New England, where the marine climate is for the most part more arctic than that of the extreme north of Scotland—and, moreover, that the last edition of Gould's 'Invertebrata of Massachusetts' contains only a part of the species added to our fauna since the first edition was published in 1841, and very little of the great mass of facts